

# INDEX TO VOLUME 54

## AUTHOR INDEX

- Adams, G. A. (see D. I. Fennell) ..... 770
- Alexander, R. J., and M. C. Baur. Note on a two-dimensional TLC procedure for determining aflatoxins in corn ..... 699
- Allen, J. E., L. F. Hood, and J. F. Chabot. Effect of heating on the freeze-etch ultrastructure of hydroxypropyl distarch phosphate and unmodified tapioca starches ..... 783
- Anderson, P. D. (see P. L. Finney) .. 1259
- Anderson, R. A., H. F. Conway, and L. H. Burbridge. Communication to the editor. Yield and chemical composition of fractions from the dry milling of a high-lysine grain sorghum ..... 855  
 ——— (see H. F. Conway) ..... 1290
- Baig, M. M., and R. C. Hoseney. Effects of mixer speed, dough temperature, and water absorption on flour-water mixograms ..... 605  
 ——— (see E. D. Weak) ..... 794
- Baker, C. W. (see N. C. Doty) ..... 717
- Baker, D. Determining fiber in cereals ..... 360
- Banasik, O. J. (see J. W. Dick) ..... 246  
 ——— (see S. Vasiljevic) ..... 397  
 ——— (see M. D. Breen) ..... 728  
 ——— (see M. D. Breen) ..... 737  
 ——— (see C. A. Watson) ..... 1264
- Baur, M. C. (see R. J. Alexander) .... 699
- Bean, M. M., M. M. Hanamoto, K. D. Nishita, D. K. Mecham, and D. A. Fellers. Sov-fortified wheat-flour blends. IV. Storage stability with several surfactant additives ..... 1159
- Bechtel, D. B. (see Y. Pomeranz) ..... 25
- Beuchat, L. R. Modification of cookie-baking properties of peanut flour by enzymatic and chemical hydrolysis ..... 405
- Bietz, J. A., F. R. Huebner, J. E. Sanderson, and J. S. Wall. Wheat gliadin homology revealed through N-terminal amino acid sequence analysis ..... 1070
- Binder, S. F. (see E. R. Skoch) ..... 1218
- Bockholt, A. J. (see D. I. Fennell) .... 770
- Bodwell, C. E. Application of animal data to human protein nutrition: a review . 958
- Bolte, L. C. (see R. J. McGinty) ..... 187  
 ——— and K. F. Finney. Note on small-scale laboratory equipment for separating germ from wheat ..... 306
- Booth, G. D. (see Y. Pomeranz) ..... 1034
- Bothast, R. J. (see D. I. Fennell) ..... 770
- Breen, M. D., A. A. Seyam, and O. J. Banasik. The effect of mill by-products and soy protein on the physical characteristics of expanded snack foods ..... 728  
 ——— and ———  
 Durum wheat air-classified flours and their effect on spaghetti quality ..... 737
- Brekke, O. L. (see A. C. Stringfellow) . 415
- Brobst, K. M. (see H. D. Scobell) ..... 905
- Bujard, E. (see O. De Rham) ..... 238
- Burbridge, L. H. (see A. C. Stringfellow) ..... 415  
 ——— (see R. A. Anderson) ..... 855
- Bur, J. (see B. Launay) ..... 1042  
 ——— (see B. Launay) ..... 1152
- Bushuk, W., and V. K. Mehrotra. Studies of water binding by differential thermal analysis. I. Dough studies using the boiling mode ..... 311  
 ——— and ——— Studies of water binding by differential thermal analysis. II. Dough studies using the melting mode ..... 320  
 ——— and ——— Studies of water binding by differential thermal analysis. III. Bread studies using the melting mode ..... 326  
 ——— (see K. Khan) ..... 588  
 ——— (see K. Kobrehel) ..... 833
- Calloway, D. H. (see S. Meyer) ..... 110
- Calvert, O. H. (see D. I. Fennell) ..... 770
- Catsimpoalas (see C. J. Lynch) ..... 1282
- Caul, J. F. (see K. M. Patel) ..... 379
- Chabot, J. F. (see J. E. Allen) ..... 783
- Chiang, B. -Y., and J. A. Johnson. Measurement of total and gelatinized starch by glucoamylase and *o*-toluidine reagent ..... 429  
 ——— and ——— Gelatinization of starch in extruded products .... 436
- Chibber, B. A. K., E. Voicu, E. T. Mertz, and D. V. Glover. Studies on corn proteins. XI. Distribution of lysine during germination of normal and *opaque-2* maize .... 558
- Chopra, S. L. (see R. K. Sethi) ..... 79
- Chung, F. H. (see V. A. De Stefanis) .. 13
- Chung, O. K., Y. Pomeranz, K. F. Finney, J. D. Hubbard, and M. D. Shogren. Defatted and reconstituted wheat flours. I. Effects of solvent and soxhlet types on functional

# INDEX TO VOLUME 54

## AUTHOR INDEX

- Adams, G. A. (see D. I. Fennell) ..... 770
- Alexander, R. J., and M. C. Baur. Note on a two-dimensional TLC procedure for determining aflatoxins in corn ..... 699
- Allen, J. E., L. F. Hood, and J. F. Chabot. Effect of heating on the freeze-etch ultrastructure of hydroxypropyl distarch phosphate and unmodified tapioca starches ..... 783
- Anderson, P. D. (see P. L. Finney) .. 1259
- Anderson, R. A., H. F. Conway, and L. H. Burbridge. Communication to the editor. Yield and chemical composition of fractions from the dry milling of a high-lysine grain sorghum ..... 855  
 ——— (see H. F. Conway) ..... 1290
- Baig, M. M., and R. C. Hoseney. Effects of mixer speed, dough temperature, and water absorption on flour-water mixograms ..... 605  
 ——— (see E. D. Weak) ..... 794
- Baker, C. W. (see N. C. Doty) ..... 717
- Baker, D. Determining fiber in cereals ..... 360
- Banasik, O. J. (see J. W. Dick) ..... 246  
 ——— (see S. Vasiljevic) ..... 397  
 ——— (see M. D. Breen) ..... 728  
 ——— (see M. D. Breen) ..... 737  
 ——— (see C. A. Watson) ..... 1264
- Baur, M. C. (see R. J. Alexander) .... 699
- Bean, M. M., M. M. Hanamoto, K. D. Nishita, D. K. Mecham, and D. A. Fellers. Sov-fortified wheat-flour blends. IV. Storage stability with several surfactant additives ..... 1159
- Bechtel, D. B. (see Y. Pomeranz) ..... 25
- Beuchat, L. R. Modification of cookie-baking properties of peanut flour by enzymatic and chemical hydrolysis ..... 405
- Bietz, J. A., F. R. Huebner, J. E. Sanderson, and J. S. Wall. Wheat gliadin homology revealed through N-terminal amino acid sequence analysis ..... 1070
- Binder, S. F. (see E. R. Skoch) ..... 1218
- Bockholt, A. J. (see D. I. Fennell) .... 770
- Bodwell, C. E. Application of animal data to human protein nutrition: a review . 958
- Bolte, L. C. (see R. J. McGinty) ..... 187  
 ——— and K. F. Finney. Note on small-scale laboratory equipment for separating germ from wheat ..... 306
- Booth, G. D. (see Y. Pomeranz) ..... 1034
- Bothast, R. J. (see D. I. Fennell) ..... 770
- Breen, M. D., A. A. Seyam, and O. J. Banasik. The effect of mill by-products and soy protein on the physical characteristics of expanded snack foods ..... 728  
 ——— and ———  
 Durum wheat air-classified flours and their effect on spaghetti quality ..... 737
- Brekke, O. L. (see A. C. Stringfellow) . 415
- Brobst, K. M. (see H. D. Scobell) ..... 905
- Bujard, E. (see O. De Rham) ..... 238
- Burbridge, L. H. (see A. C. Stringfellow) ..... 415  
 ——— (see R. A. Anderson) ..... 855
- Bur, J. (see B. Launay) ..... 1042  
 ——— (see B. Launay) ..... 1152
- Bushuk, W., and V. K. Mehrotra. Studies of water binding by differential thermal analysis. I. Dough studies using the boiling mode ..... 311  
 ——— and ——— Studies of water binding by differential thermal analysis. II. Dough studies using the melting mode ..... 320  
 ——— and ——— Studies of water binding by differential thermal analysis. III. Bread studies using the melting mode ..... 326  
 ——— (see K. Khan) ..... 588  
 ——— (see K. Kobrehel) ..... 833
- Calloway, D. H. (see S. Meyer) ..... 110
- Calvert, O. H. (see D. I. Fennell) ..... 770
- Catsimpoalas (see C. J. Lynch) ..... 1282
- Caul, J. F. (see K. M. Patel) ..... 379
- Chabot, J. F. (see J. E. Allen) ..... 783
- Chiang, B. -Y., and J. A. Johnson. Measurement of total and gelatinized starch by glucoamylase and *o*-toluidine reagent ..... 429  
 ——— and ——— Gelatinization of starch in extruded products .... 436
- Chibber, B. A. K., E. Voicu, E. T. Mertz, and D. V. Glover. Studies on corn proteins. XI. Distribution of lysine during germination of normal and *opaque-2* maize .... 558
- Chopra, S. L. (see R. K. Sethi) ..... 79
- Chung, F. H. (see V. A. De Stefanis) .. 13
- Chung, O. K., Y. Pomeranz, K. F. Finney, J. D. Hubbard, and M. D. Shogren. Defatted and reconstituted wheat flours. I. Effects of solvent and soxhlet types on functional

- (breadmaking) properties ..... 454  
 \_\_\_\_\_ and M. D. Shogren. Defatted and reconstituted wheat flours. II. Effects of solvent type and extracting conditions on flours varying in breadmaking quality ..... 484  
 \_\_\_\_\_ and C. C. Tsen. Functional properties of surfactants in breadmaking. II. Composition of lipids associated with doughs containing various levels of surfactants ..... 857
- Ciaccio, C. F., and B. L. D'Appolonia. Characterization of starches from various tubers and their use in bread-baking ..... 1096
- Clements, R. L. Distribution of ash among flour extracts and fractions and its relation to electrical conductivity ..... 840  
 \_\_\_\_\_ Electrical conductivity of flour suspensions and extracts in relation to flour ash ..... 847  
 \_\_\_\_\_ Large-scale laboratory soxhlet extraction of wheat flours, and of intact and cracked grains ..... 865  
 \_\_\_\_\_ Quantitative studies of wheat-flour lipids extracted with various solvents by an elution methods. .... 1198
- Conway, H. F. (see R. A. Anderson) .. 855
- Cook, L. J. (see R. A. Orth) ..... 713
- Crawford, R. D. (see C. A. Watson) .. 657
- Crozet, N. Ultrastructural changes in wheat-flour proteins during fixation and embedding ..... 1108
- Daigger, G. C. (see R. J. McGinty) ... 187
- Dam, R. Destruction of aflatoxins during fermentation and by-product isolation from artificially contaminated grains ..... 705
- D'Appolonia, B. L. Rheological and baking studies of legume-wheat flour blends ..... 53  
 \_\_\_\_\_ (see S. K. Kim) ..... 150  
 \_\_\_\_\_ (see S. K. Kim) ..... 207  
 \_\_\_\_\_ (see S. K. Kim) ..... 216  
 \_\_\_\_\_ (see S. K. Kim) ..... 225  
 \_\_\_\_\_ (see L. A. MacArthur) ... 669  
 \_\_\_\_\_ (see N. Prentice) ..... 1084  
 \_\_\_\_\_ (see C. F. Ciaccio) ..... 1096
- Davis, G. (see W. T. Greenaway) ..... 373
- De Rham, O., P. Van De Rovaart, E. Bujard, F. Mottu, and J. Hidalgo. Fortification of soy protein with cheese whey protein and the effect of alkaline pH ..... 238
- De Stefanis, V. A., J. G. Ponte, Jr., F. H. Chung, and N. A. Ruzza. Binding of crumb softeners and dough strengtheners during breadmaking ..... 13
- Dexter, J. E. and R. R. Matsuo. Changes in semolina proteins during spaghetti processing ..... 882
- Deyoe, C. W. (see R. C. Hoseney) ... 1062  
 \_\_\_\_\_ (see E. R. Skoch) ..... 1218
- Dick, J. W. (see W. C. Shuey) ..... 42  
 \_\_\_\_\_ W. C. Shuey, and O. J. Banasik. Adjustment of rheological properties of flours by fine grinding and air classification ..... 246  
 \_\_\_\_\_ (see W. C. Shuey) ..... 1026  
 \_\_\_\_\_ (see C. A. Watson) ..... 1264
- Dikeman, E. (see C. A. Watson) ..... 120  
 \_\_\_\_\_ and Y. Pomeranz. Note on mineral contents of dark hard and yellow hard kernels separated from red winter wheat ..... 183
- Donald, W. W., and C. J. Mirocha. Chitin as a measure of fungal growth in stored corn and soybean seed ..... 466
- Donelson, J. R. (see W. T. Yamazaki) . 352
- Donovan, G. R., J. W. Lee, and R. D. Hill. Compositional changes in the developing grain of high- and low-protein wheats. I. Chemical composition ..... 638  
 \_\_\_\_\_ and \_\_\_\_\_ Compositional changes in the developing grain of high- and low-protein wheats. II. Starch and protein synthetic capacity ..... 646
- Doty, N. C., and C. W. Baker. Microwave conditioning of hard red spring wheat. I. Effects of wide power range on flour and bread quality ..... 717
- Earle, F. R. Protein and oil in corn: variation by crop years from 1907 to 1972 ... 70
- Eldridge, A. C., K. Warner, and W. J. Wolf. Alcohol treatment of soybeans and soybean protein products ..... 1229
- El-Negoumy, A. M., C. W. Newman, and B. R. Moss. Chromatographic fractionation and composition of the components of the salt-soluble proteins from hiproly (CI 3947) and hiproly normal (CI 4362) barleys ..... 332
- Emodi, A. (see S. H. Rubin) ..... 895
- Felilet, P., E. Fevre, and K. Kobrehel. Modifications in durum wheat protein properties during pasta dough sheeting ..... 580
- Fellers, D. A. (see M. M. Bean) ..... 1159
- Fennell, D. I. (see E. B. Lillehoj) ..... 366  
 \_\_\_\_\_ W. F. Kwolek, E. B. Lillehoj, G. A. Adams, R. J. Bothast, M. S. Zuber, O.

- H. Calvert, W. D. Guthrie, A. J. Bockholt, A. Manwiller, and M. D. Jellum. *Aspergillus flavus* presence in silks and insects from developing and mature corn ears ..... 770
- Fevre, E. (see P. Feillet) ..... 580
- Finley, J. W. Protein removal from gluten-starch wash water ..... 131
- Finney, K. F. (see Y. Pomeranz) ..... 25  
 (see L. C. Bolte) ..... 306  
 (see O. K. Chung) ..... 454  
 (see O. K. Chung) ..... 484  
 (see M. D. Shogren) ..... 616  
 (see M. D. Shogren) ..... 665  
 (see C. D. Magoffin) ..... 760  
 (see O. R. Goforth) ..... 1259
- Finney, P. L. (see R. S. Ling) ..... 388  
 (see C. D. Magoffin) ..... 760  
 G. L. Rubenthaler, H. C. Jeffers, and P. D. Anderson. Short-time baking systems. III. Malt interdependence in a sugar-free formula. .... 1259
- Fleming, S. E., and F. W. Sosulski. Breadmaking properties of four concentrated plant proteins ..... 1124  
 and F. W. Sosulski. Nutritive value of bread fortified with concentrated plant proteins and lysine ..... 1238
- Fujino, Y. (see N. Kuroda) ..... 997
- Fuwa, H., M. Nakajima, A. Hamada, and D. V. Glover. Comparative susceptibility to amylases of starches from different plant species and several single endosperm mutants and their double-mutant combinations with *opaque-2* inbred Oh43 maize ..... 230
- Gallant D. (see K. Saio) ..... 1171
- Gerrity, A. B. (see F. D. Vidal) ..... 272
- Gilbertson, J. T. (see Y. Pomeranz) .. 1034
- Glover, D. V. (see H. Fuwa) ..... 230  
 (see B. A. K. Chibber) ..... 558
- Goforth, D. R., K. F. Finney, R. C. Hosney, and M. D. Shogren. Effect of strength and concentration of acid on the functional properties of solubilized gluteins of good and poor quality bread flours .... 1249
- Gohl, B., K. Larsson, M. Nilsson, O. Theander, and S. Thomke. Distribution of carbohydrates in early harvested barley grain ..... 690
- Goulden, M. L. (see O. L. Shotwell) .. 620
- Greenaway, W. T., C. A. Watson, and G. Davis. Factors for converting bushel weight to hectoliter weight for six cereal grains, flax, and soybeans ..... 373
- Griffin, E. L. (see A. C. Stringfellow) . 415
- Gumbmann, M. R. (see C. A. Watson) ..... 657
- Guthrie, W. D. (see D. I. Fennell) .... 770
- Hackler, L. R. Methods of measuring protein quality: a review of bioassay procedures ..... 984
- Hamada, A. (see H. Fuwa) ..... 230
- Hanamoto, M. M. (see M. M. Bean) . 1159
- Harland, B. F., and D. Oberleas. A modified method for phytate analysis using an ion-exchange procedure: application to textured vegetable proteins ..... 827
- Hesseltine, C. W. (see O. L. Shotwell) ..... 620
- Heyne, E. G. (see C. A. Watson) ..... 161
- Hidalgo, J. (see O. De Rham) ..... 238
- Hill, R. D. (see G. R. Donovan) ..... 638  
 (see G. R. Donovan) ..... 646  
 (see M. P. Silvanovich) .. 1270
- Hood, L. F. (see J. E. Allen) ..... 783  
 and G. K. O'Shea. Calcium binding by hydroxypropyl distarch phosphate and unmodified starches ..... 266
- Hosney, R. C. (see R. S. Ling) ..... 388  
 (see R. S. Ling) ..... 597  
 (see M. M. Baig) ..... 605  
 (see E. D. Weak) ..... 794  
 P. A. Seib, and C. W. Deyoe. Use of salts of 6-acyl esters of L-ascorbic and D-isoascorbic acids in breadmaking ..... 1062  
 (see D. R. Goforth) ..... 1249
- Hubbard, J. D. (see O. K. Chung) .... 454  
 Y. Pomeranz, and F. S. Lai. Note on protein contents and amino acid composition of dark hard and yellow hard kernels separated from red winter wheat ..... 778
- Huebner, F. R. (see J. A. Bietz) ..... 1070
- Imai, S. (see S. Nagao) ..... 198  
 (see S. Nagao) ..... 300
- Inglett, G. E. (see H. C. Nielsen) ..... 503
- Ishibashi, S. (see S. Nagao) ..... 198  
 (see S. Nagao) ..... 300
- Jeffers, H. C., and G. L. Rubenthaler. Effect of roll temperature on flour yield with the Brabender Quadrumat ..... 1018  
 (see P. L. Finney) ..... 1259
- Jellum, M. D. (see D. I. Fennell) ..... 770
- Johnson, J. A. (see K. M. Patel) ..... 379  
 (see B. -Y. Chiang) ..... 429  
 (see B. -Y. Chiang) ..... 436

- Jones, B. L., and A. S. Mak. Amino acid sequences of the two  $\alpha$ -purothionins of hexaploid wheat ..... 511
- Jones, R. A., and C. Y. Tsai. Changes in lysine and tryptophan content during germination of normal and mutant maize seed ..... 565
- Kanbe, T. (see S. Nagao) ..... 198  
 (see S. Nagao) ..... 300
- Kaneko, Y. (see S. Nagao) ..... 198  
 (see S. Nagao) ..... 300
- Kaoc, (see F. J. Robinson) ..... 1192
- Kasai, Z. (see K. Tanaka) ..... 684  
 (see M. Ogawa) ..... 1029
- Kattan, A. A. (see R. N. Sharp) ..... 1288
- Khan, K., and W. Bushuk. Studies of glutenin. IX. Subunit composition by sodium dodecyl sulfate-polyacrylamide gel electrophoresis at pH 7.3 and 8.9 ..... 588
- Kilborn, R. H. (see K. H. Tipples) ..... 92
- Kim, S. K., and B. L. D'Appolonia. Effect of pentosans on the retrogradation of wheat starch gels ..... 150  
 and ..... Bread staling studies. I. Effect of protein content on staling rate and bread crumb pasting properties ..... 207  
 and ..... Bread staling studies. II. Effect of protein content and storage temperature on the role of starch ..... 216  
 and ..... Bread staling studies. III. Effect of pentosans on dough, bread, and bread staling rate ..... 225
- Kingswood, K. (see N. L. Stenvert) ..... 627
- Kobrehel, K. (see P. Feillet) ..... 580  
 and W. Bushuk. Studies of Glutenin. X. Effect of fatty acids and their sodium salts on solubility in water ..... 833
- Kruger, J. E., and K. Preston. The distribution of carboxypeptidases in anatomical tissues of developing and germinating wheat kernels ..... 167  
 Changes in the catalases of wheat during kernel growth and maturation ..... 820
- Kuroda, N., M. Ohnishi, and Y. Fujino. Sterol lipids in rice bran ..... 997
- Kwolek, W. F. (see W. T. Yamazaki) ..... 352  
 (see E. B. Lillehoj) ..... 366  
 (see O. L. Shotwell) ..... 620  
 (see D. I. Fennell) ..... 770
- Lai, F. S. (see J. D. Hubbard) ..... 778
- Larsson, K. (see B. Gohl) ..... 690
- Launay, B., J. Buré, and J. Praden. Use of the chopin alveographe as a rheological tool. I. Dough deformation measurements ..... 1042  
 and J. Buré. Use of the chopin alveographe as a rheological tool. II. Dough properties in biaxial extension ..... 1152
- Law, D. P., and R. Tkachuk. Near infrared diffuse reflectance spectra of wheat and wheat components ..... 256  
 and ..... Determination of moisture content in wheat by near-infrared diffuse reflectance spectrophotometry ..... 874
- Lee, J. W. (see G. R. Donovan) ..... 638  
 (see G. R. Donovan) ..... 646
- Lii, C.-Y., and D. R. Lineback. Characterization and comparison of cereal starches ..... 138
- Lillehoj, E. B., D. I. Fennell, and W. F. Kwolek. Aflatoxin and *aspergillus flavus* occurrence in 1975 corn at harvest from a limited region of Iowa ..... 366  
 (see O. L. Shotwell) ..... 620  
 (see D. I. Fennell) ..... 770
- Lineback, D. R. (see C.-Y. Lii) ..... 138
- Ling, R. S., R. C. Hoseney, and P. L. Finney. Nonfat dry milk fractions in bread-making. II. Effect on oxidation requirement ..... 388  
 and ..... Effect of certain nutrients on the gas produced in preferments ..... 597
- Loew, R. J. (see G. S. Ranhotra) ..... 496
- Lorenz, K., G. MacFarland, and J. Maga. Research note on pressure digestion of cereal grains and flours for mineral analysis by atomic absorption ..... 281  
 (see K. Verdeal) ..... 475  
 and J. Welsh. Agronomic and baking performance of semi-dwarf triticales ..... 1049
- Lynch, C. J., C. K. Rha, and N. Catsimpoolas. Note on the rapid proteolysis of glycine by pepsin and trypsin ..... 1282
- MacArthur, L. A., and B. L. D'Appolonia. The carbohydrates of various pin milled and air-classified flour streams. II. Starch and pentosans ..... 669
- MacDonald, B. (see S. Sefa-Dedeh) ..... 813
- MacFarland, G. (see K. Lorenz) ..... 281
- Maga, J. (see K. Lorenz) ..... 281
- Magoffin, C. D., P. L. Finney, and K. F. Finney. Short-time baking systems. II. A 70-min sugar-free formula for conventional and high-protein breads ..... 760

- Mak, A. S.** (see B. L. Jones) ..... 511
- Maneval, R. D.** (see W. C. Shuey) ..... 42  
     (see W. C. Shuey) ..... 1026
- Manwiller, A.** (see D. I. Fennell) ..... 770
- Matsuki, J.** (see M. Seguchi) ..... 287  
     (see M. Seguchi) ..... 918  
     (see M. Seguchi) ..... 1056
- Matsuo, R. R.** (see J. E. Dexter) ..... 882
- Matthews, R. H.** (see J. L. Weihrauch) ..... 444  
     \_\_\_\_\_ and M. Y. Workman. Nutrient composition of selected wheat products ..... 1115
- McDonald, C. E.** (see P. N. Nelson) ..... 1182
- McGinty, R. J., C. A. Watson, R. Rousser, L. C. Bolte, and G. C. Daigger.** Note on modification of the udy-modified weber mill ..... 187  
     (see R. A. Stermer) ..... 345
- McGregor, H. W.** Note on residues in flour resulting from malathion application in an operating mill ..... 1286
- Mecham, D. K.** (see M. M. Bean) ..... 1159
- Mehrotra, V. K.** (see W. Bushuk) ..... 311  
     (see W. Bushuk) ..... 320  
     (see W. Bushuk) ..... 326
- Mertz, E. T.** (see B. A. K. Chibber) ..... 558
- Meyer, S., and D. H. Calloway.** Gastrointestinal response to oat and wheat milling fractions in older women ..... 110
- Miller, J.** Availability of iron in several commercial bakery products for hemoglobin regeneration in anemic rats ..... 572
- Minett, W.** (see R. A. Orth) ..... 713
- Mirocha, C. J.** (see W. W. Donald) ..... 466
- Mohr, H. E.** (see L. M. Seitz) ..... 179
- Moss, B. R.** (see A. M. El-Negoumy) ..... 333
- Mottu, F.** (see O. De Rham) ..... 238
- Mueller, J. K.** (see H. C. Nielsen) ..... 503
- Nagao, S., S. Ishibashi, S. Imai, T. Sato, T. Kanbe, Y. Kaneko, and H. Otsubo.** Quality characteristics of soft wheats and their utilization in Japan. II. Evaluation of wheats from the United States, Australia, France, and Japan ..... 198  
     \_\_\_\_\_ and \_\_\_\_\_ Quality characteristics of soft wheats and their utilization in Japan. III. Effects of crop year and protein content on product quality ..... 300
- Nakajima, M.** (see H. Fuwa) ..... 230
- Nelson, P. N., and C. E. McDonald.** Properties of wheat flour protein in flour from selected mill stream ..... 1182
- Newman, C. W.** (see A. M. El-Negoumy) ..... 333
- Nielsen, H. C., J. S. Wall, J. K. Mueller, K. Warner, and G. E. Inglett.** Effect of bound lipid on flavor of protein isolate from corn germ ..... 503
- Nilsson, M.** (see B. Gohl) ..... 690
- Nishita, K. D.** (see M. M. Bean) ..... 1159
- Oberleas, D.** (see B. F. Harland) ..... 827
- Ogawa, M.** (see K. Tanaka) ..... 684  
     \_\_\_\_\_ K. Tanaka, and Z. Kasai. Note on the phytin-containing particles isolated from rice scutellum ..... 1029
- Ohnishi, M.** (see N. Kuroda) ..... 997
- Orth, R. A., W. Minett, and L. J. Cook.** Methyl bromide fumigation. II. Effect of normal dosages on flour and wheat—breadmaking quality and wheat germination ..... 713
- O'Shea, G. K.** (see L. F. Hood) ..... 266
- Otsubo, H.** (see S. Nagao) ..... 198  
     (see S. Nagao) ..... 300
- Patel, K. M., J. F. Caul, and J. A. Johnson.** Horsebean as protein supplement in bread-making. III. Effects of horsebean protein on aroma and flavor profile of Moroccan-type bread ..... 379
- Paton, D.** (see P. J. Wood) ..... 524  
     (see P. W. Voisey) ..... 534  
     \_\_\_\_\_ and P. W. Voisey. Rapid method for the determination of diastatic activity of cereal flours using the Ottawa Starch Viscometer ..... 1007
- Paulis, J. W., and J. S. Wall.** Fractionation and characterization of alcohol-soluble reduced corn endosperm gluten proteins ..... 1223
- Petit, L.** (see K. Saio) ..... 1171
- Pfeifer, V. F.** (see A. C. Stringfellow) ..... 415
- Pomeranz, Y., M. D. Shogren, K. F. Finney, and D. B. Bechtel.** Fiber in bread-making—effects on functional properties ..... 25  
     (see E. Dikeman) ..... 183  
     (see R. A. Stermer) ..... 345  
     (see O. K. Chung) ..... 454  
     (see O. K. Chung) ..... 484  
     (see J. D. Hubbard) ..... 778  
     G. S. Robbians, J. T. Gilbertson, and G. D. Booth. Effects of nitrogen fertilization on lysine, threonine, and methionine of hulled and hull-less barley cultivars ..... 1034
- Ponte, J. G., Jr.** (see V. A. De Stefanis) ..... 13
- Praden, J.** (see B. Launay) ..... 1042
- Prentice, N., and B. L. D'Appolonia.** High-fiber bread containing brewer's spent grain ..... 1084

- Preston, K. (see J. E. Kruger) ..... 167
- Püskülcü, M. (see V. L. Youngs) ..... 803
- Puyat, L. V. (see G. S. Ranhotra) .... 496
- Rand, W. M. (see V. R. Young) ..... 929
- Ranhotra, G. S., R. J. Loewe, and L. V. Puyat.  
Bioavailability and functionality (bread-  
making) of zinc in various organic and in-  
organic sources ..... 496
- Rasper, V. F. (see S. Sefa-Dedeh) .... 746  
..... (see S. Sefa-Dedeh) ..... 813
- Reichert, R. D., and C. G. Youngs. Dehulling  
cereal grains and grain legumes for  
developing countries. II. Chemical  
composition of mechanically and tradi-  
tionally dehulled sorghum and millet  
..... 174
- Rha, C. K. (see C. J. Lynch) ..... 1282
- Robbins, G. S. (see Y. Pomeranz) .... 1034
- Robinson, F. J., and C. Kao. Tempeh and  
miso from chickpea, horse bean, and  
soybean ..... 1192
- Rousser, R. (see R. J. McGinty) ..... 187
- Rubenthaler, G. L. (see M. D. Shogren)  
..... 665  
..... (see P. L. Finney) ..... 1259  
..... (see H. C. Jeffers) ..... 1018
- Rubin, S. H., A. Emodi, and L. Scialpi. Micro-  
nutrient additions to cereal grain products  
..... 895
- Ruzza, N. A. (see V. A. De Stefanis) ... 13
- Saio, K., D. Gallant, and L. Petit. Electron  
microscope research on sunflower protein  
bodies ..... 1171
- Sanderson, J. E. (see J. A. Bietz) .... 1070
- Sastry, L. V. S. (see U. Singh) ..... 1
- Sato, T. (see S. Nagao) ..... 198  
..... (see S. Nagao) ..... 300
- Satterlee, L. D. (see R. Dam) ..... 705
- Scialpi, L. (see S. H. Rubin) ..... 895
- Scobell, H. D., K. M. Brobst, and E. M. Steele.  
Automated liquid chromatographic sys-  
tem for analysis of carbohydrate mixtures  
..... 905
- Scrimshaw, N. S. (see V. R. Young) .. 929
- Sefa-Dedeh, S., and V. F. Rasper. Water-  
soluble nonstarchy polysaccharides of  
composite flours. I. Chemical nature of  
polysaccharides from yam (*Dioscorea*) and  
cassava flours ..... 746  
..... B. MacDonald, and V. F. Rasper.  
Water-soluble nonstarchy polysac-  
charides of composite flours. II. The effect  
of polysaccharides from yam (*Dioscorea*)  
and cassava flours on the rheological  
behavior of wheat dough ..... 813
- Seguchi, M., and J. Matsuki. Studies on pan-  
cake baking. I. Effect of chlorination of  
flour on pan-cake qualities ..... 287  
..... and ..... Studies on pan-  
cake baking. II. Effect of lipids on pan-  
cake qualities ..... 918  
..... and ..... Studies on pan-  
cake baking. III. effects of pH, mixing  
time, and moisture level on the quality of  
pan-cake from reconstituted flour  
..... 1056
- Seib, P. A. (see E. D. Weak) ..... 794  
..... (see R. C. Hosney) ..... 1062
- Seitz, L. M., and H. E. Mohr. A new method  
for quantitation of aflatoxin in corn  
..... 179  
..... H. E. Mohr, R. Burroughs, and  
D. E. Sauer. Ergosterol as an indicator of  
fungal invasion in grains ..... 1207
- Sethi, R. K., G. L. Soni, and S. L. Chopra.  
Varietal differences in chickpea flour (*Ci-  
carietinum*) in relation to water vapor  
sorption ..... 79
- Seyam, A. A. (see M. D. Breen) ..... 728  
..... (see M. D. Breen) ..... 737
- Shafer, M. A. M. (see E. Springsteen) . 193
- Shogren, M. D. (see Y. Pomeranz) .... 25  
..... (see O. K. Chung) ..... 454  
..... (see O. K. Chung) ..... 484  
..... and K. F. Finney. Note on a  
simple 100-g dough mold ..... 616  
..... and G. L.  
Rubenthaler. Note on determination of gas  
production ..... 665
- Shotwell, O. L., M. L. Goulden, E. B. Lillehoj,  
W. F. Kwolek, and C. W. Hesseltine.  
Aflatoxin occurrence in 1973 corn at  
harvest. III. Aflatoxin distribution in  
contaminated, insect-damaged corn  
..... 620
- Shuey, W. C., R. D. Maneval, and J. W. Dick.  
Eighty per cent extraction flour by tail-end  
regrinding and redressing ..... 42  
..... (see C. A. Watson) ..... 64  
..... (see C. A. Watson) ..... 189  
..... (see J. W. Dick) ..... 246  
..... (see S. Vasiljevic) ..... 397  
..... (see C. A. Watson) ..... 657  
..... J. W. Dick, and R. D. Maneval.  
Note on experimental milling evaluation  
of durum wheat ..... 1026  
..... (see C. A. Watson) ..... 1264
- Siddiqui, I. R. (see P. J. Wood) ..... 524
- Silvanovich, M. P., and R. D. Hill.  $\alpha$ -  
amylases from triticale 6A190: purification  
and characterization ..... 1270



- Singh, U., and L. V. S. Sastry. Studies on the proteins of the mutants of barley grain. I. Extraction and electrophoretic characterization ..... 1
- Skoch, E. R., S. F. Binder, and C. W. Deyoe. Studies on waste potato starch and corn in urea-containing liquid supplements using *in vitro* rumen fermentation ..... 1218
- Smith, R. R. (see V. L. Youngs) ..... 803  
(see D. R. Goforth) ..... 1249
- Soni, G. L. (see R. K. Sethi) ..... 79
- Sosulski, F. W. (see S. E. Fleming) .. 1124  
(see S. E. Fleming) ..... 1238
- Sprick, K. J. (see C. A. Watson) ..... 189
- Springsteen, E., M. E. Zabik, and M. A. M. Shafer. Note on layer cakes containing 30 to 70% wheat bran ..... 193
- Steele, E. M. (see H. D. Scobell) ..... 905
- Steinke, F. H. Protein efficiency ratio pitfalls and causes of variability: A review . 949
- Stenvert, N. L., and K. Kingswood. Factors influencing the rate of moisture penetration into wheat during tempering ..... 627
- Stermmer, R. A., Y. Pomeranz, and R. J. McGinty. Infrared reflectance spectroscopy for estimation of moisture of whole grain ..... 345
- Stringfellow, A. C., O. L. Brekke, V. F. Pfeifer, L. H. Burbridge, and E. L. Griffin. Fractionation of defatted wheat- and corn-germ flours by air-classification ... 415
- Tam, S. W. (see R. Dam) ..... 705
- Tanaka, K., M. Ogawa, and Z. Kasai. The rice scutellum. II. A comparison of scutellar and aleurone electron-dense particles by transmission electron microscopy including energy-dispersive X-ray analysis ..... 684  
(see M. Ogawa) ..... 1029
- Theander, O. (see B. Gohl) ..... 690
- Thomke, S. (see B. Gohl) ..... 690
- Timbers, G. E. (see P. W. Voisey) .... 534
- Tipples, K. H., and R. H. Kilborn. Factors affecting mechanical dough development. V. Influence of rest period on mixing and "unmixing" characteristics of dough ..... 92
- Tkachuk, R. (see D. P. Law) ..... 256
- Tsai, C. Y. (see R. A. Jones) ..... 565
- Tsen, C. C. (see O. K. Chung) ..... 857
- Van De Rovaart, P. (see O. De Rham) ..... 238
- Vasiljevic, S., O. J. Banasik, and W. C. Shuey. A micro unit for producing durum semolina ..... 397
- Verdeal, K., and K. Lorenz. Alkylresorcinols in wheat, rye, and triticale ..... 475
- Vidal, F. D., and A. B. Gerrity. Enhancement of maturing agents by metaphosphates ..... 272
- Voicu, E. (see B. A. K. Chibber) ..... 558
- Voisey, P. W., D. Paton, and G. E. Timbers. The Ottawa Starch Viscometer—a new instrument for research and quality control applications ..... 534  
(see D. Paton) ..... 1007
- Vose, J. R. Functional characteristics of an intermediate amylose starch from smooth-seeded field peas compared with corn and wheat starches ..... 1141
- Wall, J. S. (see J. W. Paulis) ..... 1223
- Warner, K. (see A. C. Eldridge) ..... 1229
- Watson, C. A., W. C. Shuey, O. J. Banasik, and J. W. Dick. Effect of wheat class on near-infrared reflectance ..... 1264
- Wolf, W. J. (see A. C. Eldridge) ..... 1229
- Yamazaki, W. T., J. R. Donelson, and W. F. Kwolek. Effects of flour fraction composition on cookie diameter ... 352
- Young, V. R., W. M. Rand, and N. S. Scrimshaw. Measuring protein quality in humans: A review and proposed method ..... 929
- Youngs, C. G. (see R. D. Reichert) ... 174
- Youngs, V. L., M. Püskülcü, and R. R. Smith. Oat lipids. I. Composition and distribution of lipid components in two oat cultivars ..... 803
- Zabik, M. E. (see E. Springsteen) ..... 193
- Zuber, M. S. (see D. I. Fennell) ..... 770



## SUBJECT INDEX

**Aflatoxin**

- corn harvest, 1973; in contaminated, insect-damaged corn (Shotwell *et al.*) ... 620  
destruction of; during fermentation and by-product isolation from artificially contaminated grains (Dam *et al.*) ... 705  
in corn before harvest; production by isolates from corn silks and corn insects (Fennell *et al.*) ... 770  
in corn; a new method for quantitation (Seitz and Mohr) ... 179  
two-dimensional TLC procedure for determination in corn (Alexander and Baur) ... 699

**Air classification**

- adjustment of rheological properties of flours by (Dick *et al.*) ... 246  
fractionation of defatted wheat- and corn-germ flours (Stringfellow *et al.*) ... 415

**Amino acids**

- composition of dark and yellow hard kernels separated from red winter wheat (Hubbard *et al.*) ... 778  
essential requirements (Bodwell) ... 958  
lysine changes in normal and mutant germinating maize seeds (Chibber *et al.*) ... 558  
measuring protein quality in humans (Young *et al.*) ... 929  
methionine; corn protein; glutenin (Paulis and Wall) ... 1223  
sequence analysis, N-terminal; wheat gliadin homology revealed through (Bietz *et al.*) ... 1070  
sequences of the two  $\alpha$ -purothionins of hexaploid wheat (Jones and Mak) ... 511

**Baking**

- effect of chlorination of flour on pan-cake qualities (Seguchi and Matsuki) ... 287  
effects of pH, mixing time, and moisture level on the quality of pan-cake from reconstituted flour (Seguchi and Matsuki) ... 1056  
enhancement of maturing agents by metaphosphates (Vidal and Gerrity) ... 272  
lipids on pan-cake qualities (Seguchi and Matsuki) ... 918  
malt interdependence in a sugar-free formula (Finney *et al.*) ... 1259  
nutrient composition of selected wheat products (Matthews and Workman)

- ... 1115  
pentosans on dough, bread and bread staling rate (Kim and D'Appolonia) ... 225  
qualities of straight-grade and extended-extraction flours (Watson *et al.*) ... 657  
seventy-minute sugar-free formula for conventional, high-protein breads (Magoffin *et al.*) ... 760

**Barley**

- $\beta$ -glucan determination (Wood *et al.*) ... 524  
early-harvested; carbohydrates in (Gohl *et al.*) ... 690  
hulled, hull-less cultivars; effects of nitrogen fertilization on selected amino acids of (Pomeranz *et al.*) ... 1034  
mutants; studies on proteins (Singh and Sastry) ... 1  
salt-soluble proteins of (El-Negoumy *et al.*) ... 333

**Bran**

- effect of mill by-products and soy protein on the physical characteristics of expanded snack foods (Breen *et al.*) ... 728  
in breadmaking (Pomeranz *et al.*) ... 25  
layer cakes containing 30 to 70% wheat bran (Springsteen *et al.*) ... 193  
rice; sterol lipids in (Kuroda *et al.*) ... 997

**Bread and breadmaking**

- binding of crumb softeners and dough strengtheners (De Stefanis *et al.*) ... 13  
bioavailability and functionality of zinc (Ranhotra *et al.*) ... 496  
bran and fiber in (Pomeranz *et al.*) ... 25  
characterization of starches from various tubers and their use in (Ciaccio and D'Appolonia) ... 1096  
effect of horsebean flour and protein isolate on aroma and flavor profile (Patel *et al.*) ... 379  
effect of nonfat dry milk fractions on oxidation requirement (Ling *et al.*) ... 388  
effect of pentosans on (Kim and D'Appolonia) ... 225  
effect of protein content and storage temperature on starch (Kim and D'Appolonia) ... 216  
effect of protein content on staling rate and bread crumb pasting properties (Kim and D'Appolonia) ... 207  
enhancement of maturing agents by metaphosphates (Vidal and Gerrity) ... 272

- factors affecting mechanical dough development (Tipples and Kilborn) . 92  
 high-fiber (Prentice and D'Appolonia) ..... 1084  
 properties of concentrated plant proteins by vital gluten and dough conditioners (Fleming and Sosulski) ..... 1124  
 quality; as affected by methyl bromide fumigation (Orth *et al.*) ..... 713  
 quality; effects of wide microwave power range (Doty and Baker) ..... 717  
 seventy-minute sugar-free formula for conventional high-protein (Magaffin *et al.*) ..... 760  
 storage stability with several surfactant additives (Bean *et al.*) ..... 1159  
 using defatted and reconstituted wheat flours. I. (Chung *et al.*) ..... 454  
 using defatted and reconstituted wheat flours. II. (Chung *et al.*) ..... 484  
 water binding by differential thermal analysis; melting mode (Bushuk and Mehrotra) ..... 326  
 with fortified flours (Rubin *et al.*) .... 895
- Brewers' spent grain**  
 high-fiber bread (Prentice and D'Appolonia) ..... 1084
- Cake and cookies**  
 baking properties of peanut flour by enzymatic and chemical hydrolysis (Beuchat) ..... 405  
 cookie diameter; effects of flour fraction composition on (Yamazaki *et al.*) .. 352  
 layer cakes containing 30 to 70% wheat bran (Springsteen *et al.*) ..... 193  
 nutrient composition of selected wheat products (Matthews and Workman) ..... 1115  
 quality characteristics of soft wheats (Nagao *et al.*) ..... 198
- Carbohydrates**  
 $\beta$ -glucan determination in oats and barley (Wood *et al.*) ..... 524  
 chemical nature of polysaccharides from yam and cassava flours (Sefa-Dedeh and Rasper) ..... 746  
 distribution in early-harvested barley grain (Gohl *et al.*) ..... 690  
 effect of polysaccharides from yam and cassava flours on the rheological behavior of wheat dough (Sefa-Dedeh *et al.*) ..... 813  
 mixtures; analysis with automated liquid chromatographic system (Scobell *et al.*) ..... 905  
 pin milled and air-classified flour streams.
- II. starch and pentosans (MacArthur and D'Appolonia) ..... 669
- Cellulose**  
 fiber in breadmaking (Pomeranz *et al.*) ..... 25
- Cereal grains**  
 lipid content of; milled and baked products (Weihrauch and Matthews) ..... 444  
 pressure digestion of (Lorenz *et al.*) .. 281
- Corn**  
 aflatoxin in (Lillehoj *et al.*) ..... 366  
 aflatoxins; a new method for quantitation (Seitz and Mohr) ..... 179  
 changes in lysine and tryptophan content during germination of normal and mutant seeds (Jones and Tsai) ..... 565  
 contaminated, insect-damaged; aflatoxin distribution in (Shotwell *et al.*) ..... 620  
 effect of mill by-products and soy protein on the physical characteristics of expanded snack foods (Breen *et al.*) ..... 728  
 enzymatic hydrolysis of starch granules from several endosperm mutants (Fuwa *et al.*) ..... 230  
 ergosterol as an indicator of fungal invasion in (Seitz *et al.*) ..... 1207  
 estimation of moisture by infrared spectroscopy (Stermer *et al.*) ..... 345  
 fractionation and characterization of alcohol-soluble reduced corn endosperm glutelin proteins (Paulis and Wall) ..... 1223  
 fractionation of by air classification (Stringfellow *et al.*) ..... 415  
 germ protein isolate; germ effect of, bound lipid on flavor of (Nielsen *et al.*) ... 503  
 insects and *Aspergillus flavus*; aflatoxin in (Fennell *et al.*) ..... 770  
 lysine changes in germinating normal and mutant seeds (Chibber *et al.*) ..... 558  
 micronutrient additions to cereal grain products (Rubin *et al.*) ..... 895  
 protein and oil contents; variation by years (Earle) ..... 70  
 starches compared with amylose starch (Vose) ..... 1141  
 storage; chitin as a measure of fungal growth (Donald and Mirocha) ..... 466  
 two-dimensional TLC procedure for determining aflatoxins in (Alexander and Baur) ..... 699
- Dehulling**  
 cereal grains and grain legumes for

- developing countries (Reichert and Youngs) ..... 174

## Dough

- Chopin Alveographe as a rheological tool; deformation measurements of (Launay *et al.*) ..... 1042
- conditioning effect of 6-acyl esters of L-ascorbic and D-isoascorbic acids (Hoseney *et al.*) ..... 1062
- crumb softeners, strengtheners; binding during breadmaking (De Stefanis *et al.*) ..... 13
- effect of certain compounds on mixing properties (Weak *et al.*) ..... 794
- effect of polysaccharides on rheological behavior of (Sefa-Dedeh *et al.*) ..... 813
- gas production (Shogren *et al.*) ..... 665
- influence of rest period on mixing and "unmixing" (Tipples and Kilborn) .. 92
- lipid composition in; levels of surfactants in (Chung and Tsen) ..... 857
- properties in biaxial extension (Launay *et al.*) ..... 1152
- sample 100-g dough molder (Shogren and Finney) ..... 616
- sheeting of durum wheat (Feillet *et al.*) ..... 580
- straight-grade and extended-extraction flours (Watson *et al.*) ..... 657
- temperature; effects on flour-water absorption (Baig and Hoseney) .... 605
- water binding by differential thermal analysis. I; effect of mixing strength, mixing time, protein content, pentosans on energy of binding (Bushuk and Mehrotra) ..... 311
- water binding by differential thermal analysis. II; effect of mixing, protein content, damaged starch, improvers and salt on bound water (Bushuk and Mehrotra) ..... 320

## Enzymes

- aspartokinase levels in germinating normal and opaque-2 maize (Chibber *et al.*) ..... 558
- changes in the catalases of wheat during kernel growth and maturation (Kruger) ..... 820
- comparative susceptibility to amylases of starches from different plant species and several single endosperm mutants and their double-mutant combinations with opaque-2 inbred Oh43 maize (Fuwa *et al.*) ..... 230
- determination of diastatic activity of cereal flours using the Ottawa Starch Viscometer (Paton and Voisey) ..... 1007

- inhibition by alcohol (Eldridge *et al.*) ..... 1229
- proteolytic; distribution of carboxypeptidases in developing and germinating wheat kernels (Kruger and Preston) ..... 167

## Errata

- Alexander, R. J., and M. C. Baur (Vol. 54, p. 699) ..... 996
- Hackler, L. R. (Vol. 54, p. 984) .... 1170

## Fermentation

- destruction of aflatoxins during (Dam *et al.*) ..... 705
- effect of certain nutrients on the gas produced in preferments (Ling and Hoseney) ..... 597
- rumen, studies on waste potato starch and corn in liquid supplements using (Skoch *et al.*) ..... 1218

## Fertilizer

- nitrogen; effects on selected amino acids of hulled and hull-less barley cultivars (Pomeranz *et al.*) ..... 1034

## Fiber

- brewer's spent yeast in bread (Prentice and D'Appolonia) ..... 1084
- effect of mill by-products and soy protein on the physical characteristics of expanded snack foods (Breen *et al.*) ..... 728
- effects of functional properties in breadmaking (Pomeranz *et al.*) ..... 25
- in cereals (Baker) ..... 360

## Flour

- Agtron reflectance values of (Watson and Shuey) ..... 64
- aqueous extracts; ash distribution in; relation to electrical conductivity (Clements) ..... 840
- bread; acid effect on solubilized glutens of good and poor quality (D. R. Goforth *et al.*) ..... 1249
- cassava; effect of polysaccharides from on the rheological behavior of wheat dough (Sefa-Dedeh *et al.*) ..... 813
- chickpea; varietal differences in, in relation to water vapor sorption (Sethi *et al.*) ..... 79
- chlorination of on pan-cake qualities (Seguchi and Matsuki) ..... 287
- composite; water-soluble nonstarchy polysaccharides of (Sefa-Dedeh and Rasper) ..... 746
- determination of diastatic activity using the

Ottawa Starch Viscometer (Paton and Voisey) ..... 1007  
 digestion of for mineral analysis by atomic absorption (Lorenz *et al.*) ..... 281  
 effect of roll temperature with the Brabender Quadrumat (Jeffers and Rubenthaler) ..... 1018  
 effects of mixer speed, dough temperature and water absorption (Baig and Hosney) ..... 605  
 eighty per cent extraction, by tail-end regrounding and redressing (Shuey *et al.*) ..... 42  
 fortified (Rubin *et al.*) ..... 895  
 fraction composition; effects on cookie diameter (Yamazaki *et al.*) ..... 352  
 fractionation of by air classification (Stringfellow *et al.*) ..... 415  
 hard red spring wheat, estimating ash content of flour mill streams (Watson *et al.*) ..... 189  
 legume-wheat blends, rheological and baking studies (D'Appolonia) ..... 53  
 pin milled, air-classified (MacArthur and D'Appolonia) ..... 669  
 quality; as affected by methyl bromide fumigation (Orth *et al.*) ..... 713  
 quality; effects of wide microwave power range (Doty and Baker) ..... 717  
 reconstituted; effects of pH, mixing time and moisture level on quality of pan-cake (Seguchi and Matsuki) ..... 1056  
 residues in resulting from malathion application in an operating mill (McGregor) ..... 1286  
 rheological properties, air-classified (Dick *et al.*) ..... 246  
 soy fortified with several surfactants (Bean *et al.*) ..... 1159  
 straight-grade and extended-extraction, physical dough, baking, and nutritional qualities (Watson *et al.*) ..... 657  
 suspensions; electrical conductivity of (Clements) ..... 847  
 thirty to 70% wheat bran in layer cakes (Springsteen *et al.*) ..... 193  
 ultrastructural changes in proteins during fixation and embedding (Crozet) ..... 1108  
 varying in breadmaking quality, effects of solvent type and extracting conditions on (Chung *et al.*) ..... 484  
 wheat; defatted and reconstituted (Chung *et al.*) ..... 454  
 wheat lipids, quantitative studies of by elution method (Clements) ..... 1198  
 wheat; protein properties from selected mill streams (Nelson and McDonald) ..... 1182  
 wheat; Soxhlet extraction of (Clements) ..... 865

## Germination

maize seed; changes in lysine and tryptophan content (Jones and Tsai) ..... 565  
 normal and opaque-2 maize; changes in lysine (Chibber *et al.*) ..... 558

## Gliadin

homology; revealed through N-terminal amino acid sequence analysis (Bietz *et al.*) ..... 1070

## Gluten

near infrared diffuse reflectance spectra of wheat and wheat components (Law and Tkachuk) ..... 256  
 solubilized; effect of functional properties of (D. R. Goforth *et al.*) ..... 1249  
 starch wash water; removing protein from (Finley) ..... 131

## Glutenin

effect of fatty acids and their sodium salts on solubility in water (Kobrehel and Bushuk) ..... 833  
 subunit composition (Khan and Bushuk) ..... 588

## Insects

as vectors of *Aspergillus flavus*; population differences on two corn hybrids (Fennell *et al.*) ..... 770

## Instruments and instrumentation

effect of wheat class on near infrared reflectance (Watson *et al.*) ..... 1264  
 estimation of moisture by infrared spectroscopy (Stermer *et al.*) ..... 345  
 micro unit for producing durum semolina (Vasiljevic *et al.*) ..... 397  
 modification of the Udy-modified Weber mill (McGinty *et al.*) ..... 187  
 near infrared diffuse reflectance spectra (Law and Tkachuk) ..... 256  
 one hundred-g dough molder (Shogren and Finney) ..... 616  
 Ottawa Starch Viscometer (Voisey *et al.*) ..... 534  
 small-scale laboratory equipment for separating germ from wheat (Bolte and Finney) ..... 306

## Iron

availability from bread for hemoglobin regeneration (Miller) ..... 572

## Lipids

effect of bound lipid on flavor of protein isolate from corn germ (Nielsen *et al.*) ..... 503

- effect on pan-cake qualities (Seguchi and Matsuki)..... 918
- extractability in various Soxhlet types; composition as affected by solvent and extracting conditions (Chung *et al.*) . 454
- extractability in various temperatures (Chung *et al.*) ..... 484
- in doughs containing surfactants (Chung and Tsen)..... 857
- large scale extraction from flours and grains (Clements) ..... 865
- oat; composition and distribution of components (Youngs *et al.*)..... 803
- of selected cereal grains (Weihsrauch *et al.*)..... 444
- sterol; in rice bran (Kuroda *et al.*) ..... 997
- wheat-flour, quantitative studies of by an elution method (Clements) ..... 1198

## Methods

- Agron reflectance values of flour (Watson and Shuey) ..... 64
- atomic absorption spectrophotometry; in estimating ash content of hard red spring wheat (Watson *et al.*) ..... 189
- automated liquid chromatographic system for analysis of carbohydrate mixtures (Scobell *et al.*)..... 905
- $\beta$ -glucan determination in oats and barley (Wood *et al.*) ..... 524
- bread studies using the melting mode (Bushuk and Mehrotra)..... 326
- determining the extent of fungal invasion in grains by an ergosterol assay (Seitz *et al.*)..... 1207
- dough studies using the boiling mode (Bushuk and Mehrotra)..... 311
- dough studies using the melting mode (Bushuk and Mehrotra)..... 320
- fiber in cereals (Baker)..... 360
- flour-water mixograms, effects of mixer speed, dough temperature and water absorption on (Baig and Hosney) .. 605
- gas production rate (Shogren *et al.*) .. 665
- glucoamylase and *o*-toluidine for starch (Chiang and Johnson) ..... 429
- moisture content in wheat by near-infrared diffuse reflectance spectrophotometry (Law and Tkachuk) ..... 874
- moisture estimation by infrared spectroscopy (Stermer *et al.*)..... 345
- pressure digestion of cereal grains and flours for mineral analysis by atomic absorption (Lorenz *et al.*) ..... 281
- quantitation of aflatoxin in corn (Seitz and Mohr)..... 179
- quantitative studies of wheat-flour lipids by an elution method (Clements)

- ..... 1198
- rapid method determination of diastatic activity of cereal flours using the Ottawa Starch Viscometer (Paton and Voisey) ..... 1007
- studying glutenin by sodium dodecyl polyacrylamide gel electrophoresis (Kahn and Bushuk) ..... 588
- textured vegetable proteins; phytate analysis using an ion-exchange procedure (Harland and Oberleas) ..... 827
- use of Chopin Alveographe as a rheological tool. II. dough properties in biaxial extension (Launay and Buré) ..... 1152

## Milling

- Agron reflectance values of flour (Watson and Shuey)..... 64
- dehulling sorghum and millet (Reichert and Youngs) ..... 174
- effect of roll temperature on flour yield with the Brabender Quadrumat (Jeffers and Rubenthaler) ..... 1018
- eighty per cent extraction flour by tail-end regrinding and redressing (Shuey *et al.*) ..... 42
- evaluation of durum wheat (Shuey *et al.*)..... 1026
- fractionation of defatted wheat and corn germ flours by air classification (Stringfellow *et al.*)..... 415
- hard red spring wheat; effects of microwave conditioning (Doty and Baker)..... 717
- malathion residues found in mill fractions (McGregor) ..... 1286
- micro unit for producing durum semolina (Vasiljevic *et al.*) ..... 397
- rheological properties; air-classified flour (Dick *et al.*) ..... 246

## Minerals

- calcium binding by hydroxypropyl distarch phosphate and unmodified starches (Hood and O'Shea) ..... 266
- cereal grains, flours (Lorenz *et al.*) ..... 281
- content and composition in wheat kernels (Dikeman and Pomeranz) ..... 183
- effect of certain nutrients on the gas produced in preferments (Ling and Hosney) ..... 597
- estimating ash content of flour mill streams of hard red spring wheat (Watson *et al.*) ..... 189
- micronutrient additions to cereal grain products (Rubin *et al.*)..... 895
- zinc bioavailability and functionality (Ranhotra *et al.*) ..... 496

**Nutrition**

- application of animal data to human protein nutrition (Bodwell) ..... 958
- bioavailability and functionality of zinc in various organic and inorganic sources (Ranhotra *et al.*) ..... 496
- bread containing vitamin C activity from 6-acyl esters of L-ascorbic acid (Hoseney *et al.*) ..... 1062
- bread fortified with concentrated plant proteins and lysine (Fleming *et al.*) ..... 1238
- composition of selected wheat products (Matthews and Workman) ..... 1115
- fiber in cereals (Baker) ..... 360
- iron in bakery products for hemoglobin regeneration in anemic rats (Miller) ..... 572
- PER of soy and whey protein mixtures and its decrease by alkaline treatment (De Rham *et al.*) ..... 238
- protein efficiency ratio pitfalls and causes of variability (Steinke) ..... 949
- protein quality in humans (Young *et al.*) ..... 929
- straight-grade and extended-extraction flours (Watson *et al.*) ..... 657
- tempeh and miso from chickpea, horsebean, and soybean (Robinson and Kao) .. 1192

**Pasta**

- effect of durum wheat air-classified flours on spaghetti quality (Breen *et al.*) ... 737
- semolina protein changes during spaghetti processing (Dexter and Matsuo) .... 882

**Peanuts**

- modification of cookie-baking properties of peanut flour by enzymatic and chemical hydrolysis (Beuchat) ..... 405

**Pentosans**

- carbohydrates of various pin milled and air-classified flour streams (MacArthur and D'Appolonia) ..... 669
- effect on dough, bread and staling rate (Kim and D'Appolonia) ..... 225
- effect on retrogradation of wheat starch gels (Kim and D'Appolonia) ..... 150
- near infrared diffuse reflectance spectra of wheat and wheat components (Law and Tkachuk) ..... 256

**Phytic acid**

- comparison of scutellar and aleurone electron-dense particles by transmission electron microscopy including energy-dispersive X-ray analysis (Tanaka *et al.*) ..... 684

- phytate analysis using ion-exchange procedure: application to textured vegetable proteins (Harland and Oberleas) ..... 827
- phytin-containing particles isolated from rice scutellum (Ogawa and Kasai) .. 1029

**Proteins**

- amino acid sequences (Jones and Mak) ..... 511
- and oil contents of corn; variation by years (Earle) ..... 70
- application of animal data to human nutrition (Bodwell) ..... 958
- binding of crumb softeners and dough strengtheners during breadmaking (De Stefanis *et al.*) ..... 13
- compositional changes in the developing grain of high- and low-protein wheat (Donovan *et al.*) ..... 638
- concentrated plant; nutritive value of bread fortified with (Fleming *et al.*) ..... 1238
- dark hard and yellow hard kernels separated from red winter wheat (Hubbard *et al.*) ..... 778
- effect of staling rate and bread crumb pasting properties (Kim and D'Appolonia) ..... 207
- effect on the role of starch (Kim and D'Appolonia) ..... 216
- effects of nitrogen fertilization on lysine, threonine and methionine of hulled and hull-less barley cultivars (Pomeranz *et al.*) ..... 1034
- efficiency ratio pitfalls and causes of variability (Steinke) ..... 949
- electron microscope research on sunflower protein bodies (Saio *et al.*) ..... 1171
- fractionation and characterization of alcohol-soluble reduced corn endosperm glutelin proteins (Paulis and Wall) . 1223
- gliadin homology, revealed through N-terminal amino acid sequence analysis (Bietz *et al.*) ..... 1070
- high- and low-protein wheats, compositional changes in the developing grain of (Donovan *et al.*) ..... 646
- horsebean; effects on aroma and flavor of Moroccan-type bread (Patel *et al.*) ..... 379
- isolate from corn germ; effect of bound lipid on flavor (Nielsen *et al.*) ..... 503
- nutritive value; quality in humans (Young *et al.*) ..... 929
- of mutants of barley grain (Singh and Sastry) ..... 1
- peptide-bound and free lysine levels in germinating maize seeds (Chibber *et al.*) ..... 558
- plant; breadmaking properties in (Fleming

- and Sosulski) ..... 1124  
 properties of durum wheat (Feillet *et al.*) ..... 580  
 quality; methods of measuring, bioassay procedures (Hackler) ..... 984  
 removal from gluten-starch wash water (Finley) ..... 131  
 salt-soluble; chromatographic fraction and composition of (El-Negoumy *et al.*) ..... 333  
 semolina; changes during spaghetti processing (Dexter and Matsuo) ..... 882  
 soy, cheese whey; fortification of (De Rham *et al.*) ..... 238  
 wheat flour; properties of from selected mill stream (Nelson and McDonald) ..... 1182  
 wheat-flour; ultrastructural changes in during fixation and embedding (Crozet) ..... 1108
- Rice**  
 comparison of scutellar and aleurone electron-dense particles by transmission electron microscopy including energy-dispersive X-ray analysis (Tanaka *et al.*) ..... 684  
 fortified (Rubin *et al.*) ..... 895  
 scutellum; isolated phytin-containing particles of (Ogawa *et al.*) ..... 1029  
 sterol lipids in bran (Kuroda *et al.*) ..... 997  
 structure of grain (Watson and Dikeman) ..... 120
- Rye**  
 alkylresorcinols (Verdeal and Lorenz) ..... 475
- Scanning electron microscopy**  
 of bread (Pomeranz *et al.*) ..... 25  
 used to show structure of rice grain (Watson and Dikeman) ..... 120
- Sorghum**  
 estimation of moisture content by infrared spectroscopy (Stermer *et al.*) ..... 345  
 high-lysine grain; yield and chemical composition of fractions from the dry milling of (Anderson *et al.*) ..... 855
- Soybeans**  
 alcohol treatment of; improved flavor (Eldridge *et al.*) ..... 1229  
 fortified wheat flour (Bean *et al.*) ..... 1159  
 protein; effect on the physical characteristics of expanded snack foods (Breen *et al.*) ..... 728  
 protein, fortification of and effect of alkaline pH (De Rahm *et al.*) ..... 238  
 rapid proteolysis of glycinin by pepsin and trypsin (Lynch *et al.*) ..... 1282  
 seed, chitin as a measure of fungal growth (Donald and Mirocha) ..... 466  
 tempeh and miso from (Robinson and Kao) ..... 1192
- Starch**  
 amylose starch characteristics compared with corn and wheat starches (Vose) ..... 1141  
 binding of crumb softeners and dough strengtheners (De Stefanis *et al.*) ..... 13  
 carbohydrates of various pin milled and air-classified flour streams (MacArthur and D'Appolonia) ..... 669  
 cereal; characterization and comparison (Lii and Lineback) ..... 138  
 determination by glucoamylase and  $\alpha$ -toluidine (Chiang and Johnson) ..... 429  
 effect of heating on the freeze-etch ultrastructure of hydroxypropyl distarch phosphate and unmodified tapioca (Allen *et al.*) ..... 783  
 effect of protein content and storage temperature (Kim and D'Appolonia) ..... 216  
 enzymatic hydrolysis of starch granules from different plant species and endosperm mutants of corn (Fuwa *et al.*) ..... 230  
 from various tubers and their use in bread-baking (Ciacco and D'Appolonia) ..... 1096  
 gelatinization in extruded products (Chiang and Johnson) ..... 436  
 gels (Kim and D'Appolonia) ..... 150  
 in snack foods (Breen *et al.*) ..... 728  
 near infrared diffuse reflectance spectra of wheat and wheat components (Law and Tkachuk) ..... 256  
 potato and corn in liquid supplement (Skoch *et al.*) ..... 1218  
 protein removal from gluten-starch wash water (Finley) ..... 131  
 unmodified; calcium binding by (Hood and O'Shea) ..... 266
- Storage**  
 effect on Agron reflectance values of flour (Watson and Shuey) ..... 64  
 of corn and soybeans; chitin as a measure of fungal growth (Donald and Mirocha) ..... 466  
 stability of soy-fortified wheat flour blends (Bean *et al.*) ..... 1159
- Sugar**  
 gastrointestinal response to oat and wheat milling fractions in older women (Meyer and Calloway) ..... 110



**Surfactants**

- binding of crumb softeners and dough strengtheners during breadmaking (De Stefanis *et al.*) ..... 13
- in doughs (Chung and Tsen) ..... 857
- soy-fortified wheat-flour blends. IV. storage stability (Bean *et al.*) ..... 1159

**Triticale**

- alkylresorcinols in (Verdeal and Lorenz) ..... 475
- semi-dwarf; agronomic and baking performance of (Lorenz and Welsh) ..... 1049
- 6A190;  $\alpha$ -amylases from; purification and characterization (Silvanovich and Hill) ..... 1270

**Vitamins**

- micronutrient additions to cereal grain products (Rubin *et al.*) ..... 895

**Wheat**

- alkylresorcinols in (Verdeal and Lorenz) ..... 475
- catalases during kernel growth and maturation (Kruger) ..... 820
- changes in semolina proteins during spaghetti processing (Dexter and Matsuo) ..... 882
- defatted; fractionation of by air classification (Stringfellow *et al.*) ..... 415
- distribution of carboxypeptidases in anatomical tissues of kernels (Kruger and Preston) ..... 167
- durum; air classification of; in spaghetti, pasta (Breen *et al.*) ..... 737
- durum; evaluation by experimental milling (Shuey *et al.*) ..... 1026
- durum; modifications in protein properties (Feillet *et al.*) ..... 580
- effect of mill by-product and soy protein on the physical characteristics of expanded snack foods (Breen *et al.*) ..... 728
- effect of wheat class on near infrared reflectance (Watson *et al.*) ..... 1264
- eighty per cent extraction flour (Shuey *et al.*) ..... 42
- ergosterol as an indicator of fungal invasion in (Seitz *et al.*) ..... 1207

- evaluation of soft wheats from different parts of the world and their utilization in Japan (Nagao *et al.*) ..... 198
- flours; defatted and reconstituted (Chung *et al.*) ..... 454
- flours; large-scale laboratory Soxhlet extraction of (Clements) ..... 865
- germination; effects of methyl bromide fumigation on (Orth *et al.*) ..... 713
- gliadin homology; revealed through N-terminal amino acid sequence analysis (Bietz *et al.*) ..... 1070
- hard red spring; effects of microwave conditioning (Doty and Baker) ..... 717
- hard red winter; kernel weight distribution (Watson and Heyne) ..... 161
- hard red winter; mineral and protein contents (Dikeman and Pomeranz) ..... 183
- hexaploid (Jones and Mak) ..... 511
- high- and low-protein wheat; chemical composition (Donovan *et al.*) ..... 638
- high- and low-protein; compositional changes in development; starch synthetic capacity; protein synthetic capacity; environmental influences (Lee and Hill) ..... 646
- micro unit for producing durum semolina (Vasiljevic *et al.*) ..... 397
- milling fractions used to provide fiber (Meyer and Calloway) ..... 110
- moisture content in; near-infrared diffuse reflectance spectrophotometry of (Law and Tkachuk) ..... 874
- near infrared diffuse reflectance spectra (Law and Tkachuk) ..... 256
- nutrient composition of selected products (Matthews and Workman) ..... 1115
- rate of moisture penetration during tempering (Stenvert and Kingswood) ..... 627
- small-scale laboratory equipment for separating germ (Bolte and Finney) ..... 306
- soft wheat; effect of crop year and protein content on product quality in Japan (Nagao *et al.*) ..... 300
- soy-fortified wheat flour (Bean *et al.*) ..... 1159
- starches compared with amylose starch characteristics (Vose) ..... 1141
- winter; amino acid composition variations of dark hard and vitreous and yellow hard from (Hubbard *et al.*) ..... 778

# Cereal Chemistry

Published by The American Association of Cereal Chemists, Inc.

*Scientific Editor* ..... Welker G. Bechtel  
*Publications Manager* ..... Steven C. Nelson  
*Technical Editor* ..... Beth DeLap  
*Publisher* ..... Raymond J. Tarleton

## *Board of Editors:*

**R. J. ALEXANDER**  
**R. A. ANDERSON**  
**D. W. AXFORD**  
**J. N. BEMILLER**  
**A. A. BETSCHART**  
**D. A. FELLERS**  
**D. T. HOPKINS**  
**V. J. KELLEY**  
**L. T. KISSELL**  
**D. E. LaBERGE**

**K. LORENZ**  
**Y. POMERANZ**  
**G. W. PRATT**  
**J. J. RACKIS**  
**P. A. SEIB**  
**W. C. SHUEY**  
**C. D. STONE**  
**B. D. WEBB**  
**V. L. YOUNGS**

**VOLUME 54, NOS. 1-6**  
**JANUARY-NOVEMBER 1977**

St. Paul, Minnesota

1977

1303

# CONTENTS

VOLUME 54, NUMBER 1, JANUARY-FEBRUARY 1977

CONTENTS	PAGE
Studies on the Proteins of the Mutants of Barley Grain. I. Extraction and Electrophoretic Characterization. <i>U. Singh and L. V. S. Sastry</i> .....	1
Binding of Crumb Softeners and Dough Strengtheners during Breadmaking. <i>V. A. De Stefanis, J. G. Ponte, Jr., F. H. Chung, and N. A. Ruzza</i> .....	13
Fiber in Breadmaking—Effects on Functional Properties. <i>Y. Pomeranz, M. D. Shogren, K. F. Finney, and D. B. Bechtel</i> .....	25
Eighty Per Cent Extraction Flour by Tail-End Regrinding and Redressing. <i>W. C. Shuey, R. D. Maneval, and J. W. Dick</i> .....	42
Rheological and Baking Studies of Legume-Wheat Flour Blends. <i>B. L. D'Appolonia</i> .....	53
Effect of Storage Time on Agron Reflectance Values of Flour. <i>C. A. Watson and W. C. Shuey</i> .....	64
Protein and Oil in Corn: Variation by Crop Years from 1907 to 1972. <i>F. R. Earle</i> .....	70
Varietal Differences in Chickpea Flour ( <i>Cicer arietinum</i> ) in Relation to Water Vapor Sorption. <i>R. K. Sethi, G. L. Soni, and S. L. Chopra</i> .....	79
Factors Affecting Mechanical Dough Development. V. Influence of Rest Period on Mixing and "Unmixing" Characteristics of Dough. <i>K. H. Tipples and R. H. Kilborn</i> .....	92
Gastrointestinal Response to Oat and Wheat Milling Fractions in Older Women. <i>S. Meyer and D. H. Calloway</i> .....	110
Structure of the Rice Grain Shown by Scanning Electron Microscopy. <i>C. A. Watson and E. Dikeman</i> .....	120
Protein Removal from Gluten-Starch Wash Water. <i>J. W. Finley</i> .....	131
Characterization and Comparison of Cereal Starches. <i>C.-Y. Liu and D. R. Lineback</i> .....	138
Effect of Pentosans on the Retrogradation of Wheat Starch Gels. <i>S. K. Kim and B. L. D'Appolonia</i> .....	150
Individual Kernel Weight Distribution of 12 Varieties of Hard Red Winter Wheat. <i>C. A. Watson and E. G. Heyne</i> .....	161
The Distribution of Carboxypeptidases in Anatomical Tissues of Developing and Germinating Wheat Kernels. <i>J. E. Kruger and K. Preston</i> .....	167
Dehulling Cereal Grains and Grain Legumes for Developing Countries. II. Chemical Composition of Mechanically and Traditionally Dehulled Sorghum and Millet. <i>R. D. Reichert and C. G. Youngs</i> .....	174
A New Method for Quantitation of Aflatoxin in Corn. <i>L. M. Seitz and H. E. Mohr</i> .....	179
Note on Mineral Contents of Dark Hard and Yellow Hard Kernels Separated from Red Winter Wheat. <i>E. Dikeman and Y. Pomeranz</i> .....	183
Note on Modification of the Udy-Modified Weber Mill. <i>R. J. McGinty, C. A. Watson, R. Rousser, L. C. Bolte, and G. C. Daigger</i> .....	187
Note on Estimating Ash Content of Flour Mill Streams of Hard Red Spring Wheat by Proximate Analysis of the Manganese Content of the Water Extract by using Atomic Absorption Spectrophotometry. <i>C. A. Watson, W. C. Shuey, and K. J. Sprick</i> .....	189
Note on Layer Cakes Containing 30 to 70% Wheat Bran. <i>E. Springsteen, M. E. Zabik, and M. A. M. Shafer</i> .....	193
Quality Characteristics of Soft Wheats and their Utilization in Japan. II. Evaluation of Wheats from the United States, Australia, France, and Japan. <i>S. Nagao, S. Ishibashi, S. Imai, T. Sato, T. Kanbe, Y. Kaneko, and H. Otsubo</i> .....	198
Instructions to Authors.....	205

## VOLUME 54, NUMBER 2, MARCH-APRIL 1977

CONTENTS	PAGE
Bread Staling Studies. I. Effect of Protein Content on Staling Rate and Bread Crumb Pasting Properties. <i>S. K. Kim and B. L. D'Appolonia</i> .....	207
Bread Staling Studies. II. Effect of Protein Content and Storage Temperature on the Role of Starch. <i>S. K. Kim and B. L. D'Appolonia</i> .....	216
Bread Staling Studies. III. Effect of Pentosans on Dough, Bread, and Bread Staling Rate. <i>S. K. Kim and B. L. D'Appolonia</i> .....	225
Comparative Susceptibility to Amylases of Starches from Different Plant Species and Several Single Endosperm Mutants and their Double-Mutant Combinations with <i>Opaque-2</i> Inbred Oh43 Maize. <i>H. Fuwa, M. Nakajima, A. Hamada, and D. V. Glover</i> .....	230
Fortification of Soy Protein with Cheese Whey Protein and the Effect of Alkaline pH. <i>O. De Rham, P. Van De Rovaart, E. Bujard, F. Mottu, and J. Hidalgo</i> .....	238
Adjustment of Rheological Properties of Flours by Fine Grinding and Air Classification. <i>J. W. Dick, W. C. Shuey, and O. J. Banasik</i> .....	246
Near infrared Diffuse Reflectance Spectra of Wheat and Wheat Components. <i>D. P. Law and R. Tkachuk</i> .....	256
Calcium Binding by Hydroxypropyl Distarch Phosphate and Unmodified Starches. <i>L. F. Hood and G. K. O'Shea</i> .....	266
Enhancement of Maturing Agents by Metaphosphates. <i>F. D. Vidal and A. B. Gerrity</i> .....	272
Research Note on Pressure Digestion of Cereal Grains and Flours for Mineral Analysis by Atomic Absorption. <i>K. Lorenz, G. MacFarland, and J. Maga</i> .....	281
Studies on Pan-Cake Baking. I. Effect of Chlorination of Flour on Pan-Cake Qualities. <i>M. Seguchi and J. Matsuki</i> .....	287
Quality Characteristics of Soft Wheats and their Utilization in Japan. III. Effects of Crop Year and Protein Content on Product Quality. <i>S. Nagao, S. Ishibashi, S. Imai, T. Sato, T. Kanbe, Y. Kaneko, and H. Otsubo</i> .....	300
Note on Small-Scale Laboratory Equipment for Separating Germ from Wheat. <i>L. C. Bolte and K. F. Finney</i> .....	306
Studies of Water Binding by Differential Thermal Analysis. I. Dough Studies using the Boiling Mode. <i>W. Bushuk and V. K. Mehrotra</i> .....	311
Studies of Water Binding by Differential Thermal Analysis. II. Dough Studies using the Melting Mode. <i>W. Bushuk and V. K. Mehrotra</i> .....	320
Studies of Water Binding by Differential Thermal Analysis. III. Bread Studies using the Melting Mode. <i>W. Bushuk and V. K. Mehrotra</i> .....	326
Chromatographic Fractionation and Composition of the Components of the Salt-Soluble Proteins from Hiproly (CI 3947) and Hiproly Normal (CI 4362) Barleys. <i>A. M. El-Negoumy, C. W. Newman, and B. R. Moss</i> .....	333
Infrared Reflectance Spectroscopy for Estimation of Moisture of Whole Grain. <i>R. A. Stermer, Y. Pomeranz, and R. J. McGinty</i> .....	345
Effects of Flour Fraction Composition on Cookie Diameter. <i>W. T. Yamazaki, J. R. Donelson, and W. F. Kwolek</i> .....	352
Determining Fiber in Cereals. <i>D. Baker</i> .....	360
Aflatoxin and <i>Aspergillus flavus</i> Occurrence in 1975 Corn at Harvest from a Limited Region of Iowa. <i>E. B. Lillehoj, D. I. Fennell, and W. F. Kwolek</i> .....	366
Factors for Converting Bushel Weight to Hectoliter Weight for Six Cereal Grains, Flax, and Soybeans. <i>W. T. Greenaway, C. A. Watson, and G. Davis</i> .....	373
Horsebean as Protein Supplement in Breadmaking. III. Effects of Horsebean Protein on Aroma and Flavor Profile of Moroccan-Type Bread. <i>K. M. Patel, J. F. Caul, and J. A. Johnson</i> .....	379
Nonfat Dry Milk Fractions in Breadmaking. II. Effect on Oxidation Requirement. <i>R. S. Ling, R. C. Hoseney, and P. L. Finney</i> .....	388

## VOLUME 54, NUMBER 3, MAY-JUNE 1977

## CONTENTS

## PAGE

A Micro Unit for Producing Durum Semolina. <i>S. Vasiljevic, O. J. Banasik, and W. C. Shuey</i> .....	397
Modification of Cookie-Baking Properties of Peanut Flour by Enzymatic and Chemical Hydrolysis. <i>L. R. Beuchat</i> .....	405
Fractionation of Defatted Wheat- and Corn-Germ Flours by Air Classification. <i>A. C. Stringfellow, O. L. Brekke, V. F. Pfeifer, L. H. Burbridge, and E. L. Griffin</i> ....	415
Measurement of Total and Gelatinized Starch by Glucoamylase and o-Toluidine Reagent. <i>B.-Y. Chiang and J. A. Johnson</i> .....	429
Gelatinization of Starch in Extruded Products. <i>B.-Y. Chiang and J. A. Johnson</i> .....	436
Lipid Content of Selected Cereal Grains and Their Milled and Baked Products. <i>J. L. Weihrauch and R. H. Matthews</i> .....	444
Defatted and Reconstituted Wheat Flours. I. Effects of Solvent and Soxhlet Types on Functional (Breadmaking) Properties. <i>O. K. Chung, Y. Pomeranz, K. F. Finney, J. D. Hubbard, and M. D. Shogren</i> .....	454
Chitin as a Measure of Fungal Growth in Stored Corn and Soybean Seed. <i>W. W. Donald and C. J. Mirocha</i> .....	466
Alkylresorcinols in Wheat, Rye, and Triticale. <i>K. Verdeal and K. Lorenz</i> .....	475
Defatted and Reconstituted Wheat Flours. II. Effects of Solvent Type and Extracting Conditions on Flours Varying in Breadmaking Quality. <i>O. K. Chung, Y. Pomeranz, K. F. Finney, and M. D. Shogren</i> .....	484
Bioavailability and Functionality (Breadmaking) of Zinc in Various Organic and Inorganic Sources. <i>G. S. Ranhoira, R. J. Loew, and L. V. Puyat</i> .....	496
Effect of Bound Lipid on Flavor of Protein Isolate from Corn Germ. <i>H. C. Nielsen, J. S. Wall, J. K. Mueller, K. Warner, and G. E. Inglett</i> .....	503
Amino Acid Sequences of the Two $\alpha$ -Purothionins of Hexaploid Wheat. <i>B. L. Jones and A. S. Mak</i> .....	511
Determination of $\beta$ -Glucan in Oats and Barley. <i>P. J. Wood, D. Paton, and I. R. Siddiqui</i> .....	524
The Ottawa Starch Viscometer—A New Instrument for Research and Quality Control Applications. <i>P. W. Voisey, D. Paton, and G. E. Timbers</i> .....	534
Studies on Corn Proteins. XI. Distribution of Lysine During Germination of Normal and Opaque-2 Maize. <i>B. A. K. Chibber, E. Voicu, E. T. Mertz, and D. V. Glover</i> .....	558
Changes in Lysine and Tryptophan Content During Germination of Normal and Mutant Maize Seed. <i>R. A. Jones and C. Y. Tsai</i> .....	565
Availability of Iron in Several Commercial Bakery Products for Hemoglobin Regeneration in Anemic Rats. <i>J. Miller</i> .....	572
Modifications in Durum Wheat Protein Properties During Pasta Dough Sheetting. <i>P. Feillet, E. Fevre, and K. Kobrehel</i> .....	580
Studies of Glutenin. IX. Subunit Composition by Sodium Dodecyl Sulfate-Polyacrylamide Gel Electrophoresis at pH 7.3 and 8.9. <i>K. Khan and W. Bushuk</i> .....	588
Effect of Certain Nutrients on the Gas Produced in Preferments. <i>R. S. Ling and R. C. Hoseney</i> .....	597
Effects of Mixer Speed, Dough Temperature, and Water Absorption on Flour-Water Mixograms. <i>M. M. Baig and R. C. Hoseney</i> .....	605
Note on a Simple 100-g Dough Molder. <i>M. D. Shogren and K. F. Finney</i> .....	616
Aflatoxin Occurrence in 1973 Corn at Harvest. III. Aflatoxin Distribution in Contaminated, Insect-Damaged Corn. <i>O. L. Shorwell,</i>	

<i>M. L. Goulden, E. B. Lillehoj, W. F. Kwolek, and C. W. Hesseltine</i> .....	620
Factors Influencing the Rate of Moisture Penetration into Wheat	
During Tempering. <i>N. L. Stenvert and K. Kingswood</i> .....	627
Compositional Changes in the Developing Grain of High- and Low-Protein	
Wheats. I. Chemical Composition. <i>G. R. Donovan, J. W. Lee, and</i>	
<i>R. D. Hill</i> .....	638
Compositional Changes in the Developing Grain of High- and Low-Protein	
Wheats. II. Starch and Protein Synthetic Capacity. <i>G. R. Donovan,</i>	
<i>J. W. Lee, and R. D. Hill</i> .....	646
Physical Dough, Baking, and Nutritional Qualities of Straight-Grade	
and Extended-Extraction Flours. <i>C. A. Watson, W. C. Shuey, R. D.</i>	
<i>Crawford, and M. R. Gumbmann</i> .....	657
Note on Determination of Gas Production. <i>M. D. Shogren, K. F. Finney,</i>	
<i>and G. L. Rubenthaler</i> .....	665
The Carbohydrates of Various Pin Milled and Air-Classified Flour Streams. II.	
Starch and Pentosans. <i>I. A. MacArthur and B. L. D'Appolonia</i> .....	669
The Rice Scutellum. II. A Comparison of Scutellar and Aleurone	
Electron-Dense Particles by Transmission Electron Microscopy	
Including Energy-Dispersive X-Ray Analysis. <i>K. Tanaka, M. Ogawa,</i>	
<i>and Z. Kasai</i> .....	684
Distribution of Carbohydrates in Early Harvested Barley Grain.	
<i>B. Gohl, K. Larsson, M. Nilsson, O. Theander, and S. Thomke</i> .....	690
Note on a Two-Dimensional TLC Procedure for Determining Aflatoxins	
in Corn. <i>R. J. Alexander and M. C. Baur</i> .....	699
Destruction of Aflatoxins During Fermentation and By-Product	
Isolation from Artificially Contaminated Grains. <i>R. Dam, S. W.</i>	
<i>Tam, and L. D. Satterlee</i> .....	705

## VOLUME 54, NUMBER 4, JULY-AUGUST 1977

## CONTENTS

## PAGE

Methyl Bromide Fumigation. II. Effect of Normal Dosages on Flour and Wheat—	
Breadmaking Quality and Wheat Germination. <i>R.A. Orth, W. Minett, and L.J. Cook</i> ...	713
Microwave Conditioning of Hard Red Spring Wheat. I. Effects of Wide Power	
Range on Flour and Bread Quality. <i>N. C. Doty and C. W. Baker</i> .....	717
The Effect of Mill By-Products and Soy Protein on the Physical	
Characteristics of Expanded Snack Foods. <i>M. D. Breen, A. A. Seyam, and</i>	
<i>O. J. Banasik</i> .....	728
Durum Wheat Air-Classified Flours and Their Effect on Spaghetti	
Quality. <i>M. D. Breen, A. A. Seyam, and O. J. Banasik</i> .....	737
Water-Soluble Nonstarchy Polysaccharides of Composite Flours. I. Chemical	
Nature of Polysaccharides from Yam ( <i>Dioscorea</i> ) and Cassava Flours. <i>S. Sefa-</i>	
<i>Dedeh and V. F. Rasper</i> .....	746
Short-Time Baking Systems. II. A 70-Min Sugar-Free Formula for Conventional	
and High-Protein Breads. <i>C. D. Magoffin, P. L. Finney, and K. F. Finney</i> .....	760
<i>Aspergillus Flavus</i> Presence in Silks and Insects from Developing and Mature	
Corn Ears. <i>D. I. Fennell, W. F. Kwolek, E. B. Lillehoj, G. A. Adams, R. J.</i>	
<i>Bothast, M. S. Zuber, O. H. Calvert, W. D. Guthrie, A. J. Bockholt, A.</i>	
<i>Manwiller, and M. D. Jellum</i> .....	770
Note on Protein Contents and Amino Acid Composition of Dark Hard and	
Yellow Hard Kernels Separated from Red Winter Wheat. <i>J. D. Hubbard,</i>	
<i>Y. Pomeranz, and F. S. Lai</i> .....	778
Effect of Heating on the Freeze-Etch Ultrastructure of Hydroxypropyl Distarch	
Phosphate and Unmodified Tapioca Starches. <i>J. E. Allen, L. F. Hood, and J.F. Chabot</i> .	783
Mixograph Studies. I. Effect of Certain Compounds on Mixing Properties.	
<i>E. D. Weak, R. C. Hoseney, P. A. Seib, and M. Bieg</i> .....	794

Oat Lipids. I. Composition and Distribution of Lipid Components in Two Oat Cultivars. <i>V. L. Youngs, M. Piiskulcū, and R. R. Smith</i> .....	803
Water-Soluble Nonstarchy Polysaccharides of Composite Flours. II. The Effect of Polysaccharides from Yam ( <i>Dioscorea</i> ) and Cassava Flours on the Rheological Behavior of Wheat Dough. <i>S. Sefa-Dedeh, B. MacDonald, and V. F. Rasper</i> .....	813
Changes in the Catalases of Wheat during Kernel Growth and Maturation. <i>J. E. Kruger</i> .....	820
A Modified Method for Phytate Analysis Using an Ion-Exchange Procedure: Application to Textured Vegetable Proteins. <i>B. F. Harland and D. Oberleas</i> .....	827
Studies of Glutenin. X. Effect of Fatty Acids and Their Sodium Salts on Solubility in Water. <i>K. Kobrehel and W. Bushuk</i> .....	833
Distribution of Ash among Flour Extracts and Fractions and Its Relation to Electrical Conductivity. <i>R. L. Clements</i> .....	840
Electrical Conductivity of Flour Suspensions and Extracts in Relation to Flour Ash. <i>R. L. Clements</i> .....	847
Communication to the Editor. Yield and Chemical Composition of Fractions from the Dry Milling of a High-Lysine Grain Sorghum. <i>R. A. Anderson, H. F. Conway, and L. H. Burbridge</i> .....	855
Functional Properties of Surfactants in Breadmaking. II. Composition of Lipids Associated with Doughs Containing Various Levels of Surfactants. <i>O. K. Chung and C. C. Tsen</i> .....	857
Large-Scale Laboratory Soxhlet Extraction of Wheat Flours, and of Intact and Cracked Grains. <i>R. L. Clements</i> .....	865
Determination of Moisture Content in Wheat by Near-Infrared Diffuse Reflectance Spectrophotometry. <i>D. P. Law</i> .....	874
Changes in Semolina Proteins during Spaghetti Processing. <i>J. E. Dexter and R. R. Matsuo</i> .....	882
Micronutrient Additions to Cereal Grain Products. <i>S. H. Rubin, A. Emodi, and L. Scialpi</i> .....	895
Automated Liquid Chromatographic System for Analysis of Carbohydrate Mixtures. <i>H. D. Scobell, K. M. Brobst, and E. M. Steele</i> .....	905
Studies on Pan-Cake Baking. II. Effect of Lipids on Pan-Cake Qualities. <i>M. Seguchi and J. Matsuki</i> .....	918
Measuring Protein Quality for Human Nutrition: Four Papers Presented at a Symposium Held at the 61st Annual Meeting, New Orleans, Oct. 1976 .....	927
Measuring Protein Quality in Humans: A Review and Proposed Method. <i>V. R. Young, W. M. Rand, and N. S. Scrimshaw</i> .....	929
Protein Efficiency Ratio Pitfalls and Causes of Variability: A Review. <i>F. H. Steinke</i> .....	949
Application of Animal Data to Human Protein Nutrition: A Review. <i>C. E. Bodwell</i> .....	958
Methods of Measuring Protein Quality: A Review of Bioassay Procedures. <i>L. R. Hackler</i> .....	984
Erratum .....	996

## VOLUME 54, NUMBER 5, SEPTEMBER-OCTOBER 1977

CONTENTS	PAGE
Sterol Lipids in Rice Bran. <i>N. Kuroda, M. Ohnishi, and Y. Fujino</i> .....	997
Rapid Method for the Determination of Diastatic Activity of Cereal Flours Using the Ottawa Starch Viscometer. <i>D. Paton and P. W. Voisey</i> .....	1007
Effect of Roll Temperature on Flour Yield with the Brabender Quadrumat Experimental Mills. <i>H. C. Jeffers and G. L. Rubenthaler</i> .....	1018
Note on Experimental Milling Evaluation of Durum Wheat. <i>W. C. Shuey, J. W. Dick, and R. D. Maneval</i> .....	1026
Note on the Phytin-Containing Particles Isolated from Rice Scutellum. <i>M. Ogawa, K. Tanaka, and Z. Kasai</i> .....	1029



Effects of Nitrogen Fertilization on Lysine, Threonine, and Methionine of Hulled and Hull-Less Barley Cultivars. <i>Y. Pomeranz, G. S. Robbins, J. T. Gilbertson, and G. D. Booth</i> .....	1034
Use of the Chopin Alveographe as a Rheological Tool. I. Dough Deformation Measurements. <i>B. Launay, J. Buré, and J. Praden</i> .....	1042
Agronomic and Baking Performance of Semi-Dwarf Triticales. <i>K. Lorenz and J. Welsh</i> .....	1049
Studies on Pan-Cake Baking. III. Effects of pH, Mixing Time, and Moisture Level on the Quality of Pan-Cake from Reconstituted Flour. <i>M. Seguchi and J. Matsuki</i> .....	1056
Use of Salts of 6-Acyl Esters of L-Ascorbic and D-Isoascorbic Acids in Breadmaking. <i>R. C. Hoseney, P. A. Seib, and C. W. Deyoe</i> .....	1062
Wheat Gliadin Homology Revealed through N-Terminal Amino Acid Sequence Analysis. <i>J. A. Bietz, F. R. Huebner, J. E. Sanderson, and J. S. Wall</i> .....	1070
High-Fiber Bread Containing Brewer's Spent Grain. <i>N. Prentice and B. L. D'Appolonia</i> .....	1084
Characterization of Starches from Various Tubers and Their Use in Bread-Baking. <i>C. F. Ciacco and B. L. D'Appolonia</i> .....	1096
Ultrastructural Changes in Wheat-Flour Proteins during Fixation and Embedding. <i>N. Crozet</i> .....	1108
Nutrient Composition of Selected Wheat Products. <i>R. H. Matthews and M. Y. Workman</i> .....	1115
Breadmaking Properties of Four Concentrated Plant Proteins. <i>S. E. Fleming and F. W. Sosulski</i> .....	1124
Functional Characteristics of an Intermediate Amylose Starch from Smooth-Seeded Field Peas Compared with Corn and Wheat Starches. <i>J. R. Vose</i> .....	1141
Use of the Chopin Alveographe as a Rheological Tool. II. Dough Properties in Biaxial Extension. <i>B. Launay and J. Buré</i> .....	1152
Soy-Fortified Wheat-Flour Blends. IV. Storage Stability with Several Surfactant Additives. <i>M. M. Bean, M. M. Hanamoto, K. D. Nishita, D. K. Mecham, and D. A. Fellers</i> .....	1159
Errata .....	1170

## VOLUME 54, NUMBER 6, NOVEMBER-DECEMBER 1977

CONTENTS	PAGE
Electron Microscope Research on Sunflower Protein Bodies. <i>K. Saio, D. Gallant, and L. Petit</i> .....	1171
Properties of Wheat Flour Protein in Flour from Selected Mill Streams. <i>P. N. Nelson and C. E. McDonald</i> .....	1182
Tempeh and Miso from Chickpea, Horse Bean, and Soybean. <i>R. J. Robinson and C. Kao</i> .....	1192
Quantitative Studies of Wheat-Flour Lipids Extracted with Various Solvents by an Elution Method. <i>R. L. Clements</i> .....	1198
Ergosterol as an Indicator of Fungal Invasion in Grains. <i>L. M. Seitz, H. E. Mohr, R. Burroughs, and D. B. Sauer</i> .....	1207
Studies on Waste Potato Starch and Corn in Urea-Containing Liquid Supplements Using <i>In Vitro</i> Rumen Fermentation. <i>E. R. Skoch, S. F. Binder, and C. W. Deyoe</i> .....	1218
Fractionation and Characterization of Alcohol-Soluble Reduced Corn Endosperm Glutelin Proteins. <i>J. W. Paulis and J. S. Wall</i> .....	1223
Alcohol Treatment of Soybeans and Soybean Protein Products. <i>A. C. Eldridge, K. Warner, and W. J. Wolf</i> .....	1229

Nutritive Value of Bread Fortified with Concentrated Plant Proteins and Lysine. <i>S. E. Fleming and F. W. Sosulski</i> .....	1238
Effect of Strength and Concentration of Acid on the Functional Properties of Solubilized Glutens of Good- and Poor-Quality Bread Flours. <i>D. R. Goforth, K. F. Finney, R. C. Hoseney, and M. D. Shogren</i> .....	1249
Short-time Baking Systems. III. Malt Interdependence in a Sugar-Free Formula. <i>P. L. Finney, G. L. Rubenthaler, H. C. Jeffers, and P. D. Anderson</i> .....	1259
Effect of Wheat Class on Near Infrared Reflectance. <i>C. A. Watson,</i> <i>W. C. Shuey, O. J. Banasik, and J. W. Dick</i> .....	1264
$\alpha$ -Amylases from Triticale 6A190: Purification and Characterization. <i>M. P. Silvanovich and R. D. Hill</i> .....	1270
Note on the Rapid Proteolysis of Glycinin by Pepsin and Trypsin. <i>C. J. Lynch, C. K. Rha, and N. Catsimpooulas</i> .....	1282
Note on Residues in Flour Resulting From Malathion Application in an Operating Mill. <i>H. E. McGregor</i> .....	1286
Author Index, Vol. 54 .....	1288
Subject Index, Vol. 54 .....	1295
Contents Index, Vol. 54 .....	1303

